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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO.           | CONFIRMATION NO.       |
|--|-------------|----------------------|-------------------------------|------------------------|
| 10/677,191   | 10/02/2003  | Gregory S. Glenn     | PD-02-0360/11836<br>(21797-0) | 8302                   |
| 7590<br>Carmen Santa Maria<br>McNees Wallace & Nurick LLC<br>100 Pine Street<br>P.O. Box 1166<br>Harrisburg, PA 17108-1166 |             |                      | EXAMINER<br>TRINH, THANH TRUC |                        |
|  |             |                      | ART UNIT<br>1795              | PAPER NUMBER           |
|  |             |                      | MAIL DATE<br>10/10/2007       | DELIVERY MODE<br>PAPER |

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Advisory Action  
Before the Filing of an Appeal Brief**

Application No.

10/677,191

Applicant(s)

GLENN, GREGORY S.

Examiner

Thanh-Truc Trinh

Art Unit

1795

**--The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

THE REPLY FILED 27 September 2007 FAILS TO PLACE THIS APPLICATION IN CONDITION FOR ALLOWANCE.

1. ☒ The reply was filed after a final rejection, but prior to or on the same day as filing a Notice of Appeal. To avoid abandonment of this application, applicant must timely file one of the following replies: (1) an amendment, affidavit, or other evidence, which places the application in condition for allowance; (2) a Notice of Appeal (with appeal fee) in compliance with 37 CFR 41.31; or (3) a Request for Continued Examination (RCE) in compliance with 37 CFR 1.114. The reply must be filed within one of the following time periods:

- a) ☒ The period for reply expires 3 months from the mailing date of the final rejection.  
b) ☐ The period for reply expires on: (1) the mailing date of this Advisory Action, or (2) the date set forth in the final rejection, whichever is later. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of the final rejection.

Examiner Note: If box 1 is checked, check either box (a) or (b). ONLY CHECK BOX (b) WHEN THE FIRST REPLY WAS FILED WITHIN TWO MONTHS OF THE FINAL REJECTION. See MPEP 706.07(f).

Extensions of time may be obtained under 37 CFR 1.136(a). The date on which the petition under 37 CFR 1.136(a) and the appropriate extension fee have been filed is the date for purposes of determining the period of extension and the corresponding amount of the fee. The appropriate extension fee under 37 CFR 1.17(a) is calculated from: (1) the expiration date of the shortened statutory period for reply originally set in the final Office action; or (2) as set forth in (b) above, if checked. Any reply received by the Office later than three months after the mailing date of the final rejection, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**NOTICE OF APPEAL**

2. ☐ The Notice of Appeal was filed on \_\_\_\_\_. A brief in compliance with 37 CFR 41.37 must be filed within two months of the date of filing the Notice of Appeal (37 CFR 41.37(a)), or any extension thereof (37 CFR 41.37(e)), to avoid dismissal of the appeal. Since a Notice of Appeal has been filed, any reply must be filed within the time period set forth in 37 CFR 41.37(a).

**AMENDMENTS**

3. ☐ The proposed amendment(s) filed after a final rejection, but prior to the date of filing a brief, will not be entered because  
(a) ☐ They raise new issues that would require further consideration and/or search (see NOTE below);  
(b) ☐ They raise the issue of new matter (see NOTE below);  
(c) ☐ They are not deemed to place the application in better form for appeal by materially reducing or simplifying the issues for appeal; and/or  
(d) ☐ They present additional claims without canceling a corresponding number of finally rejected claims.

NOTE: \_\_\_\_\_. (See 37 CFR 1.116 and 41.33(a)).

4. ☐ The amendments are not in compliance with 37 CFR 1.121. See attached Notice of Non-Compliant Amendment (PTOL-324).  
5. ☐ Applicant's reply has overcome the following rejection(s): \_\_\_\_\_.  
6. ☐ Newly proposed or amended claim(s) \_\_\_\_\_ would be allowable if submitted in a separate, timely filed amendment canceling the non-allowable claim(s).  
7. ☐ For purposes of appeal, the proposed amendment(s): a) ☐ will not be entered, or b) ☐ will be entered and an explanation of how the new or amended claims would be rejected is provided below or appended.  
The status of the claim(s) is (or will be) as follows:  
Claim(s) allowed: \_\_\_\_\_.  
Claim(s) objected to: \_\_\_\_\_.  
Claim(s) rejected: \_\_\_\_\_.  
Claim(s) withdrawn from consideration: \_\_\_\_\_.

**AFFIDAVIT OR OTHER EVIDENCE**

8. ☐ The affidavit or other evidence filed after a final action, but before or on the date of filing a Notice of Appeal will not be entered because applicant failed to provide a showing of good and sufficient reasons why the affidavit or other evidence is necessary and was not earlier presented. See 37 CFR 1.116(e).  
9. ☐ The affidavit or other evidence filed after the date of filing a Notice of Appeal, but prior to the date of filing a brief, will not be entered because the affidavit or other evidence failed to overcome all rejections under appeal and/or appellant fails to provide a showing of good and sufficient reasons why it is necessary and was not earlier presented. See 37 CFR 41.33(d)(1).  
10. ☐ The affidavit or other evidence is entered. An explanation of the status of the claims after entry is below or attached.

**REQUEST FOR RECONSIDERATION/OTHER**

11. ☒ The request for reconsideration has been considered but does NOT place the application in condition for allowance because:  
See Continuation Sheet.  
12. ☐ Note the attached Information Disclosure Statement(s). (PTO/SB/08) Paper No(s). \_\_\_\_\_.  
13. ☐ Other: \_\_\_\_\_.

Continuation of 11. does NOT place the application in condition for allowance because:

Ground 1: Applicant disagrees with the Examiner's explanation of substrate 20 as a heat sink that "as long as substrate 20 has one surface are for absorbing heat and other surface areas for dissipating heat, the Examiner believe that substrate 20 can perform as a heat sink". However, Applicant admits that "Glass and Kapton, as taught by Glenn, are of low thermal conductivity and are therefore insulators". Applicant's arguments are not persuasive. The Examiner wants to point out that "low thermal conductivity" does not mean that the material such as Glass and Katpon cannot conduct heat, or function as a heat sink.

The Applicant further lists three exhibits: "The History of Spacesuits", an excerpt from U.S. Patent 6993927, a printout from the website of Dass & Company. These exhibits are irrelevant. First of all, there is no support material for the "History of Spacesuits" nor a printout from the website of Dass & Company. Second, the "thermal insulation" discussed in U.S. Patent 6993927 is low thermal conductivity and refers to "withstanding high temperature" (See col. 4 lines 31-53 of U.S. Patent 6993927). Again, material with low thermal conductivity does not mean that material cannot conduct heat or function as a heat sink. Further, there is nothing in the claims reciting a heat sink has to be a "good conductors of heat and accelerate the dissipation of heat" as argued by the Applicant. In any event, the claimed limitation must be given the broadest reasonable interpretation, which would be taken to be that any material capable of conducting heat can function as a heat sink.

In regarding claim 2-5, Applicant also argues that "One cannot tell anything about projected areas from such a side cross-sectional view" in referring to Figure 1 of Glenn. The Examiner replies that although Figure 1 only shows the cross-sectional view, but it clearly shows the diode projected area coverage on the heat sink is less than the solar-cell projected area coverage as claimed in claims 2 and 4, regardless how the second dimension shows. Even the diode is expanding partially or entirely the solar cell in the second dimension, the projected area coverage of the diode is still less than that of the solar cell. In regarding claim 3, the substrate and diode are covered the lower surface of the solar cell, therefore the projected area coverage of the substrate and the diode has to be at least equal to the solar cell without counting the area of the substrate underneath the open space between solar cells as shown in Figure 1. The reference teaches the limitation of claim 3, therefore it is deemed to be anticipatory. Claim 5 recites limitation "the intermediate structure projected area coverage on the heat sink is not less than the solar cell projected area coverage". Glenn teaches the intermediate structure including elements 16, 18, 17 and 19 which are covering the lower surface of the solar cell, therefore the projected area coverage of the intermediate structure is at least equal and not less than the projected area coverage of the solar cell as explained in claim 3.

Applicant argues that Glenn does not teach the metallic trace deposited upon dielectric element. The Examiner respectfully disagrees. As seen in col. 6 lines 8-10 and lines 31-33, Glenn describes the metal traces 19 may be made by adhering a sheet of metal to substrate 20, then substrate 20 is juxtaposed to the dielectric bonding element 18, thereby forming a metal traces upon the dielectric layer. The claim limitation "deposited upon a dielectric layer" is a process limitation thus is not given weight in the apparatus claim. Since Glenn teaches the structural limitation of the claim, therefore the reference is deemed to be anticipatory.

Applicant argues that Glenn does not teach a PC board and the Examiner must establish by evidence that the structure of Glenn is "indistinguishable" from a PC board. As seen in the rejection, the Examiner has established by evidence that the structure taught by Glenn is indistinguishable form a PC board. A PC board is a dielectric board having metal traces; the structure of Glenn has dielectric layer 18 with metal traces (17 and 19) embedded in or on the surface of the dielectric layer 18.

Ground 2: Applicant also argues element 22 of Hartman is a piece of "non-conductive reinforcing tape 22" and "heat sinks are good conductors of heat and accelerate the dissipation of heat as compared to a structure where there is no heat sink". The Examiner disagrees. First of all, there is nothing in the claim saying the heat sink has to be a good conductor of heat and accelerates the dissipation of heat. In the broadest interpretation, the Examiner takes position that any material that can conduct heat can function as a heat sink, even a material with low heat conductivity such as element 22 of Hartman.

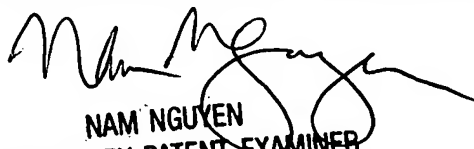
Applicant argues Hartman does not teach anti-parallel interconnection at col. 4 lines 43-58 or elsewhere. The Examiner replies that Hartman teaches the diode is in parallel with the solar cell in col. 4 lines 43-58. However, the diode must be in anti-parallel connection in terms of current-wise in order for the diode to function as a by-pass diode.

With regard to claim 8, Applicant argues that "although col. 5 lines 25-27 of Hartman state that twelve solar cells 16 were connected in series, there is no teaching of how that series connection was accomplished. The Examiner replies that in order for the solar cells connected in series, there must a be some connecting wires or circuit to accomplish the connection. Further, "how the series connection was accomplished" is referring to a method which is not given weight in the apparatus claim.

Ground 3:

With regard to claim 16, Applicant argues Hartman does not teach a heat sink, interconnection of the solar cell with diode in anti-parallel fashion, and solar cell units connected in series. Again, see explanation in ground 2.

Ground 4: Applicant argues that Glenn does not teach the metal trace deposited upon the dielectric layer or the PC board having a metal trace on a face thereof. See the explanation in Ground 1.

  
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